



Twenty-Second International Microgravity Measurements Group Meeting

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Twenty-Second International Microgravity Measurements Group Meeting

Proceedings of a conference sponsored by the Microgravity Science Division,
NASA Glenn Research Center
and held at the Radisson Cleveland Airport Hotel, North Olmsted, Ohio
October 21–23, 2003

National Aeronautics and
Space Administration

Glenn Research Center

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Hanover, MD 21076

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Preface

Summary

The International Microgravity Measurements Group (MGMG) annual meetings have been held since 1988 to provide a forum for an exchange of information and ideas about various aspects of microgravity acceleration research in international microgravity research programs. These meetings are sponsored by the Principal Investigator Microgravity Services (PIMS) project at the NASA Glenn Research Center for the NASA Physical Science Research Program and cooperating international microgravity research programs.

The 22nd MGMG meeting was held 21-23 October 2003 at the Radisson Cleveland Airport Hotel in North Olmsted, Ohio. The 51 attendees represented NASA and other space agencies, universities, and commercial companies; five of the attendees were international representatives from Canada and Japan.

Twenty-five presentations were made on a variety of microgravity environment topics including the International Space Station (ISS), acceleration measurement and analysis results, science effects from microgravity accelerations, vibration isolation, and ground testing.

Next MGMG Meeting

The 23rd MGMG annual meeting will most likely be held in mid-year 2004 at a site not yet determined. The regular topics of sensors, accelerometer systems, analysis results, vibration isolation, microgravity environment, and science effects will continue to be included.

For further information about the MGMG series of meetings, consult the MGMG web page at URL:

<http://www.grc.nasa.gov/WWW/MMA/PIMS/MGMG/mgmmain.html>

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Agenda

| Tuesday, October 21, 2003 | | | Paper # | |
|---|------------|---|--|---|
| start | end | Title | Presenter | |
| 9:00 AM | 9:15 AM | Welcoming remarks & logistics | R. DeLombard NASA GRC | |
| Session A PROGRAMMATIC | | | | |
| 9:15 AM | 9:45 AM | The MIPT - To Protect and Serve | James Smith NASA JSC | 1 |
| 9:45 AM | 10:10 AM | Microgravity Environment / Acceleration Measurement Program Overview | David Francisco NASA GRC | 2 |
| 10:10 AM | 10:30 AM | BREAK | | |
| Session B VIBRATION ISOLATION | | | | |
| 10:30 AM | 11:00 AM | Microgravity Flight Characterization of the First International Space Station Active Rack Isolation System | Glenn Bushnell [telecon] Boeing - Seattle | 3 |
| 11:05 AM | 11:45 AM | Design, Implementation and On-orbit Characterization of Robust H-infinity Controllers for the Active Rack Isolation System [ARIS] | Ian Fialho [telecon] Boeing - Houston | 4 |
| 11:45 AM | 12:15 PM | Payload Hardware Microgravity Disturbance Control | Larry A. Moss ZIN @ NASA GRC | 5 |
| 12:15 PM | 1:30 PM | LUNCH | | |
| 1:33 PM | 2:05 PM | Microgravity Vibration Isolation Sub-system (MVIS) for the ESA Fluid Science Laboratory | Bjarni Tryggvason GEDEX, Canada | 6 |
| 2:05 PM | 2:30 PM | ISS Microgravity Evaluation for Advanced Resistive Exercise Device (ARED) | Steve Scheer Boeing, Houston | 7 |

| Tuesday, October 21, 2003 | | | | <i>Paper #</i> |
|--|----------------------------------|--|------------------------------|-----------------------|
| <i>start</i> | <i>end</i> | <i>Title</i> | <i>Presenter</i> | |
| Session C INTERNATIONAL PARTNER STATUS | | | | |
| 2:30 PM | 3:00 PM | JAXA's Activities for Microgravity in JEM | Masayuki Goto JAXA, Japan | 8 |
| 3:00 PM | 3:20 PM | <i>BREAK</i> | | |
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| 3:25 PM | 4:05 PM | A Reshaped Increment 7 Science Program | Vic Cooley NASA JSC | 9 |
| 4:05 PM | 4:30 PM | Obtaining Microgravity Environment Data Products | Kevin McPherson NASA GRC | 10 |
| 7:00 PM | Evening social, Cleveland | | | |

| Wednesday, October 22, 2003 | | | | Paper # |
|---|------------|--|---|----------------|
| start | end | Title | Presenter | |
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| 9:38 AM | 10:22 AM | ISS Microgravity Environment - Vibratory Regime | Ken Hrovat ZIN @ NASA GRC | 12 |
| 10:22 AM | 10:25 AM | BREAK | | |
| 10:25 AM | 10:51 AM | ISS Quasi-steady Environment Summary | Eric Kelly ZIN @ NASA GRC | 13 |
| Session E VERIFICATION | | | | |
| 10:56 AM | 11:26 AM | Open Topic: Different Analytical Techniques for Microgravity Verification | Janice Houston Sverdrup @ NASA MSFC | 14 |
| 11:27 AM | 11:58 AM | Common Microgravity Measurement Problems | Fred Henderson [telecon] TBE/Boeing @ NASA JSC | 15 |
| 12:00 AM | 1:00 PM | LUNCH | | |
| 1:02 PM | 1:34 PM | Microgravity Emissions Laboratory (MEL) Testing and Results Summary | Anne McNelis NASA GRC | 16 |
| 1:35 PM | 2:00 PM | Summary of Node 2 Microgravity Activities | Janice Houston Sverdrup @ NASA MSFC | 17 |
| 2:00 PM | 2:32 PM | Update on FCF Microgravity Assessments | Marcus Just ZIN @ NASA GRC | 18 |
| 2:32 PM | 2:47 PM | BREAK | | |
| 2:47 PM | 3:15 PM | Thermal Radiator Rotary Joint (TRRJ) Correlation Analysis | Mike Laible Boeing, Houston | 19 |
| 3:16 PM | 3:45 PM | Microgravity Vehicle Design Requirements Closeout | Mike Laible Boeing, Houston | 20 |

| Thursday, October 23, 2003 | | | | Paper # |
|---|------------|---|------------------------------------|--------------------|
| start | end | Title | Presenter | |
| Session F MODELLING | | | | |
| 8:35 AM | 9:06 AM | ISS Structural/Microgravity Finite Element Model Correlation Activity | Steve Scheer Boeing, Houston | 21 |
| 9:08 AM | 9:38 AM | Payload Operational Predictive Microgravity Analysis | Brad Humphreys ZIN @ NASA GRC | 22 |
| 9:39 AM | 10:05 AM | An Overview of the NIRA Status | Jeff Larko NASA GRC | 23 |
| 10:05 AM | 10:20 AM | BREAK | | |
| Session G ISS PAYLOADS REQUIREMENTS | | | | |
| 10:20 AM | 10:50 AM | The Effect of G-Jitter on Fluid Science Experiments | Bjarni Tryggvason GEDEX, Canada | 24 |
| 10:50 AM | 11:15 AM | Experiment Microgravity Requirements Update for the Various Science Disciplines | Richard DeLombard NASA GRC | 25 |
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| 11:15 AM | 11:20 AM | Summary discussion of MGMG #22 and plans for MGMG #23 | Richard DeLombard NASA GRC | |

| REPORT DOCUMENTATION PAGE | | | Form Approved OMB No. 0704-0188 | |
|--|---|--|--|--|
| Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. | | | | |
| 1. AGENCY USE ONLY (Leave blank) | | 2. REPORT DATE February 2004 | | 3. REPORT TYPE AND DATES COVERED Conference Publication |
| 4. TITLE AND SUBTITLE Twenty-Second International Microgravity Measurements Group Meeting | | | 5. FUNDING NUMBERS WBS-22-101-46-02 | |
| 6. AUTHOR(S) Richard DeLombard, compiler | | | | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National Aeronautics and Space Administration John H. Glenn Research Center at Lewis Field Cleveland, Ohio 44135-3191 | | | 8. PERFORMING ORGANIZATION REPORT NUMBER E-14299 | |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) National Aeronautics and Space Administration Washington, DC 20546-0001 | | | 10. SPONSORING/MONITORING AGENCY REPORT NUMBER NASA CP-2004-212885 | |
| 11. SUPPLEMENTARY NOTES Abstracts and viewgraphs of a conference sponsored by the Microgravity Science Division, NASA Glenn Research Center and held at the Radisson Cleveland Airport Hotel, North Olmsted, Ohio, October 21-23, 2003. Responsible person, Richard DeLombard, organization code 6727, 216-433-5285. | | | | |
| 12a. DISTRIBUTION/AVAILABILITY STATEMENT Unclassified - Unlimited Subject Categories: 19, 18, and 35 Available electronically at http://gltrs.grc.nasa.gov This publication is available from the NASA Center for AeroSpace Information, 301-621-0390. | | | 12b. DISTRIBUTION CODE | |
| 13. ABSTRACT (Maximum 200 words) The International Microgravity Measurements Group (MGMG) annual meetings provide a forum for an exchange of information and ideas about various aspects of microgravity acceleration research in international microgravity research programs. These meetings are sponsored by the Principal Investigator Microgravity Services (PIMS) project at the NASA Glenn Research Center. The twenty-second MGMG meeting was held October 21-23, 2003 at the Radisson Cleveland Airport Hotel in North Olmsted, Ohio. The 51 attendees represented NASA, other space agencies, universities, and commercial companies; five of the attendees were international representatives from Canada and Japan. Twenty-five presentations were made on a variety of microgravity environment topics including the International Space Station (ISS), acceleration measurement and analysis results, science effects from microgravity accelerations, vibration isolation, and ground testing. The proceedings include the conference agenda to indicate each speaker, the title of their presentation, the actual time of their presentation, charts for each presentation, and an attendee list. | | | | |
| 14. SUBJECT TERMS Microgravity; Instrumentation; International Space Station; Acceleration measurement | | | 15. NUMBER OF PAGES 00 | |
| | | | 16. PRICE CODE | |
| 17. SECURITY CLASSIFICATION OF REPORT Unclassified | 18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified | 19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified | 20. LIMITATION OF ABSTRACT | |